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lations protecting the beaver and the pine marten are not very generally enforced and many of these animals will be taken this season. The territory in Alaska is very large and the money appropriated for protection of game and fur animals is very little, amounting this season to much less than the value of illegally caught furs that were seized.—A. H. TWITCHELL, *Flat, Iditarod Region, Alaska.*

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## RECENT LITERATURE

**Fitzsimons, F. W. THE NATURAL HISTORY OF SOUTH AFRICA. MAMMALS.** Vol. 3, pp. i-xiii, 1-278, 47 plates; Vol. 4, pp. i-xix, 1-271, 30 plates. London; Longmans, Green and Co., 1920.

The last volumes of this work, copies of which have recently reached America, are filled with interesting facts in the history of the mammals of South Africa, presented in an original and unusually readable form. The third volume, dealing with the ungulates, pictures a sad record of extermination rarely equalled in historical times in any part of the world. It is a vivid reminder of the passing of the Age of Mammals. While the solitary and smaller antelopes have held out to a surprising degree, even in settled communities, the gregarious and conspicuous species have been literally swept away since the advent of the white man. Of the bluebuck it is stated that the last known individual was killed as early as 1799 or 1800, and that only five specimens are preserved in the museums of the world. A few quaggas existed until about 1878. The typical form of Burchell's zebra is extinct, or nearly so; but one of its subspecies, threatened with the same fate, has been saved by the establishment of game reservations and by the enforcement of strict government regulations. The beautiful bontebok, which formerly occurred in tens of thousands, is extinct in a wild state; only three or four hundred animals, some of which are mixed with blesbok blood, remain today on carefully guarded preserves. The blesbok, too, has virtually ceased to exist as a wild creature, but is said to be in no danger of extermination as it is kept in numbers on fenced farms; the meat commands a good price in the markets and there is a regular demand for specimens. The white-tailed gnu exists only under similar conditions.

The typical white rhinoceros has been reduced to about 20 individuals on the game reserves in Zululand, while possibly "one or two may exist in remote parts of southern Rhodesia," where one, supposed to be the last, was shot in 1895. The case of the elephants of the Addo Bush, practically the only survivors of the South African herds, is reviewed at some length. It has been variously estimated that these numbered from 90 to 150 animals; but 75 are now being killed under official direction, and it has been predicted that within four years the elephant will be extinct in South Africa. In spite of this harrowing detail of man's destruction of interesting creatures, the accounts of the former abundance of the gregarious species are fascinating, and particularly interesting are the stories of the early migrations of the enormous herds of springboks. The hippopotamus is known to migrate at sea between the mouths of rivers.

The fourth volume includes accounts of the insectivores, rodents, cetaceans, the elephant-seal, pangolin, and aard-vark. It is stated: "Shrews vary in their

habits in the winter in South Africa. In those districts where the winter is very cold and sharp frosts prevail, the Shrew lies dormant and bereft of the power of movement." It is in connection with his general remarks on the Soricidæ that the author makes the astonishing statement that "In Europe and other countries where the winter is very cold, and insect life exceedingly scarce, the Shrews seek out some snug, sheltered situation, and hibernate until the return of warm weather, which brings with it an abundance of insect life." Of particular interest in this volume are the chapter on the South African hedgehog and the account of the introduced North American gray squirrel. The gray squirrel is said to have become such a source of vexation to fruit growers that it has been placed on the "vermin list" at Cape Town, and a bounty has been authorized for its destruction.

—N. Hollister.

**Dixon, Joseph.** NOTES ON THE NATURAL HISTORY OF THE BUSHY-TAILED WOOD RATS OF CALIFORNIA. Univ. California Publ. Zool., vol. 21, no. 3, pp. 49-74, pls. 1-3, 3 figs. in text, December 10, 1919.

"It is the function of the present paper," writes the author, "to place on record such facts as have been learned to date in regard to the habits and associational relationships of the bushy-tailed wood rats occurring in California." Following adequate descriptions of the two Californian forms (*Neotoma cinerea cinerea* and *N. c. occidentalis*) the status of the fossil form *Teonomus spelaea* Sinclair from Potter Creek Cave is considered, the author confirming Kellogg's reference of it to the recent *N. c. occidentalis*. The species *cinerea* is boreal in distribution, its altitudinal range being from 5,000 feet, as in Kings River Canyon, to 13,090 feet, on the summit of Mount Lyell.

The life history is taken up under 13 headings, as follows: local associations, mannerisms and behavior, timidity and reflexes, tracks and other sign, houses, hibernation, breeding season, growth of young, relation to other animals, foraging, food, population, and economic status. Of particular interest is a comparative statement of the relative speed of nervous impulses in individual wood rats and certain other small rodents based on shutter-speed necessary to stop all motion when the animals were photographed.  $\frac{1}{15}$  second stopped motion in the bushy-tailed wood rat;  $\frac{1}{10}$  second, alpine chipmunk (*Eutamias alpinus*);  $\frac{1}{5}$  second, California pocket gopher (*Thomomys bottae*), Great Basin pocket mouse (*Perognathus parvus olivaceus*), Tahoe chipmunk (*Eutamias speciosus frater*), and Nelson antelope ground squirrel (*Ammospermophilus nelsoni*);  $\frac{1}{10}$  second, California ground squirrel (*Citellus beecheyi*).

—Walter P. Taylor.

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**ADAMS, CHAS. C., GEORGE P. BURNS, T. L. HANKINSON, BARRINGTON MOORE, AND NORMAN TAYLOR.** Plants and animals of Mount Marcy, New York. Ecology, vol. 1, 1920: part 1, pp. 71-94, (April) August; part 2; pp. 204-233, (July) October; part 3, pp. 274-288, (October) November. (Contains remarks upon the ecological distribution of mammals on Mount Marcy.)

**ANDERSON, MALCOLM PLAYFAIR.** The discovery of the Chinese takin. Nat. Hist., vol. 20, pp. 428-433. September-October, 1920.